

Responsive coordination polymers

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One of the greatest challenges today facing physics, chemistry, and materials science is to find a way to structure molecules so as to build functional superlattices, molecular devices or responsive materials at mesoscale. For these purposes, soluble coordination polymers are of particular interest. Indeed, these architectures are obtained spontaneously from self-assembly of metal ions and polytopic bridging coordinating units (ligands) and the presence of metal species in the polymer chain give access to magnetic, redox, optical, electrochromic or mechanical properties and may also provide dynamic features relevant for the construction stimuli-responsive materials. In this context, we show here that the incorporation of functional organic bridging ligands gives access to new classes of (multi)responsive coordination polymers in which switching processes at the molecular level can induce a variety of macroscopic effects. In order to illustrate this concept, pH, redox and optically responsive polymers will be presented.

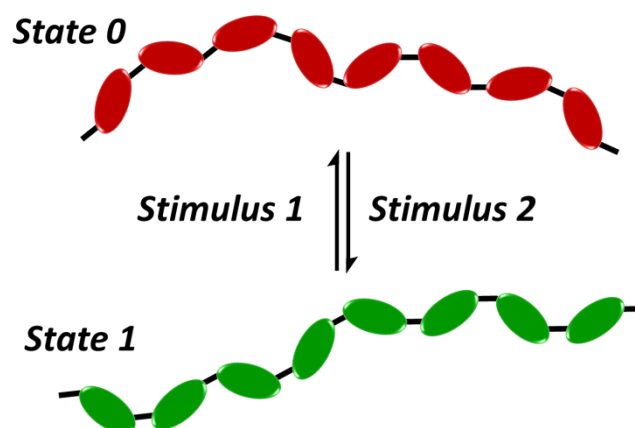


Figure 1: responsive polymers

- 1 B. Wang, M. Jacquet, K. Wang, K. Xiong, M. Yan, J. Courtois, G. Royal, *New J. Chem.* **2018**, *42*, 7823
- 2 A. Bakkar, F. Lafalet, D. Roldan, E. Puyoo, D. Jouvenot, G. Royal, E. Saint-Aman, S. Cobo, *Nanoscale* **2018**, *10*, 5436
- 3 W. S. Abdul-Hassan, D. Roux, C. Bucher, S. Cobo, F. Molton, E. Saint-Aman, G. Royal, *Chem. Eur. J.* **2018**, *24*, 12961
- 4 P. Terech, M. Yan, M. Marechal, G. Royal, J. Galvez, S. K. P. Velu, *Phys. Chem. Chem. Phys.* **2013**, *15*, 7338
- 5 D. Roldan, V. Kaliginedi, S. Cobo, V. Kolivoska, C. Bucher, W. Hong, G. Royal, T. Wandlowski, *J. Am. Chem. Soc.* **2013**, *135*, 5974